PUBLIC HEALTH BULLETIN

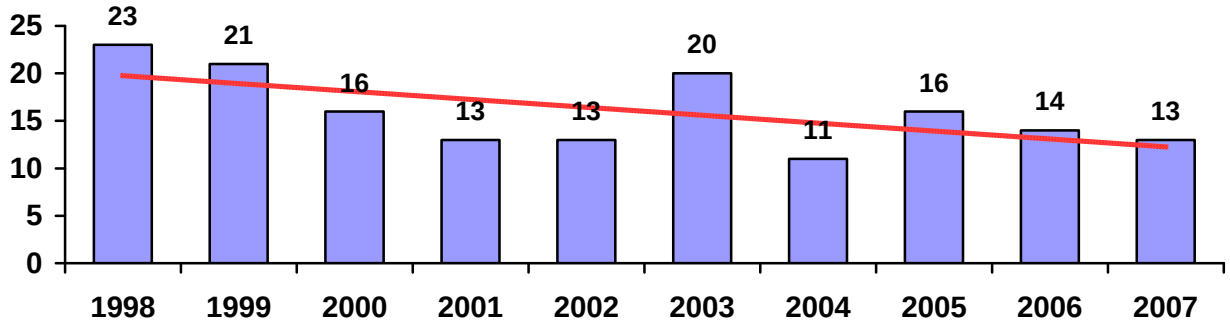
VOLUME 20 NUMBER 1 FEBRUARY 2008

2007 South Dakota tuberculosis morbidity

by Kristin Rounds, Tuberculosis Control Coordinator
Office of Disease Prevention, South Dakota Department of Health

During the last ten years, South Dakota averaged 16 cases of tuberculosis (TB) per year. In 2007, there were 13 cases of TB reported to the South Dakota Department of Health, a decrease of 1 case from 2006. Figure 1 describes the 10-year trend of decreasing TB case reports.

Figure 1. South Dakota TB Cases Reported by Year 1998-2007



The most recent data available nationally and regionally is from calendar year 2006. Figure 2 provides a comparison of the TB case rate per 100,000 population for the United States as well as a regional comparison of South Dakota compared to our border states of North Dakota, Minnesota, Iowa, Nebraska, Wyoming and Montana. Please note that South Dakota has the second highest TB case rate behind Minnesota when comparing these 7 states.

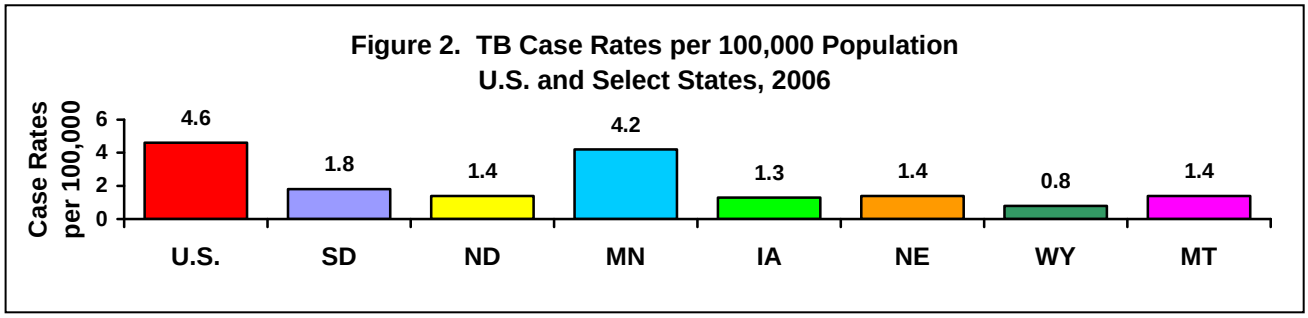
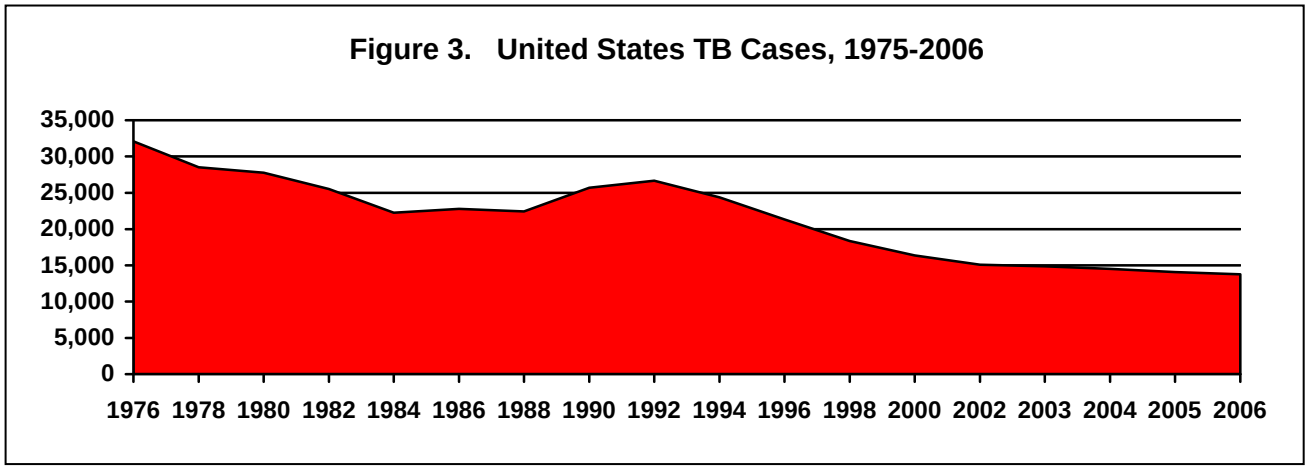


Figure 3 illustrates the historical trend of decreasing TB cases reported in the United States. In 2006 there were 13,779 TB cases reported in the US which was the lowest year on record, representing a 2.1% decrease from 2005.

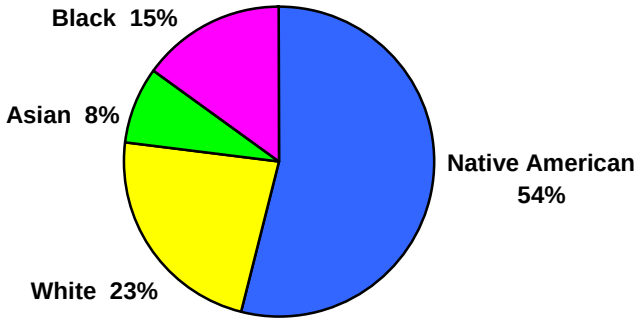


Native Americans have historically represented the highest percentage of TB cases by race. This trend continued in 2007 with Native Americans contributing 54% of the total TB cases reported. However, the percentage of Native American TB cases has dropped considerably in the last 10 years from 1997 when they represented 74% of the total cases reported. This decreasing trend is explained in part by the increasing trend of more foreign-born TB cases reported in South Dakota. Table 1 and Figure 4 provide additional information on TB cases by race in 2007.

Table 1. TB Cases Reported by Sex and Race, SD 2007

Race	Male	Female	Total	% of Cases
Native American	4	3	**7**	54%
White	2	1	**3**	23%
Black	1	1	**2**	15%
Hispanic	0	0	**0**	0%
Asian	0	1	**1**	8%
Total	**7**	**6**	**13**	**100%**

Figure 4. South Dakota TB Cases by Race, 2007



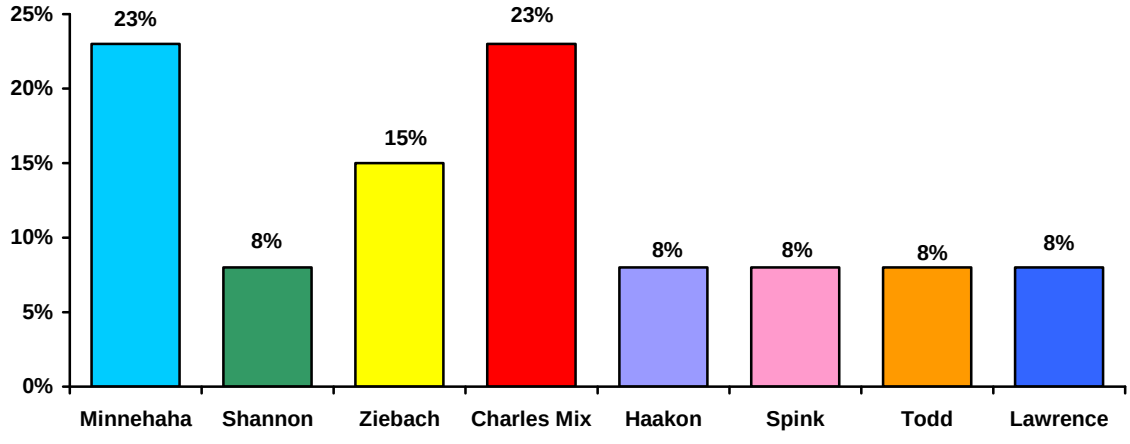
The TB incidence rate, which measures the number of TB cases per 100,000 population, is the best measure for determining the progress towards the elimination of TB in South Dakota. Native American TB case rates have dropped considerably while white cases have consistently remained low. The black, Asian and other races mainly represent TB cases born outside of the United States who were diagnosed in South Dakota. Table 2 provides additional information on TB case rates for the last 6 years.

Table 2. TB Morbidity Incidence Rates Per 100,000 by Race & Year, SD 2002-2007

Race	2002	2003	2004	2005	2006	2007
US Case Rate (All Races)	5.2	5.1	4.9	4.7	4.6	Not available
SD All Races	1.7	2.6	1.5	2.1	1.8	1.7
SD Native American	16.1	14.6	7.3	8.8	8.8	10.3
SD White	0.3	0.9	0.6	0.6	0.1	0.4
SD Black	0.0	0.0	0.0	48.4	64.5	32.3
SD Asian	0.0	69.4	0.0	52.1	52.1	17.4
All Other SD Races	0.0	0.0	41.3	0.0	0.0	0.0

**2007 US case rate data is not yet available.*

Figure 5. TB Cases Reported by County of Residence South Dakota 2007



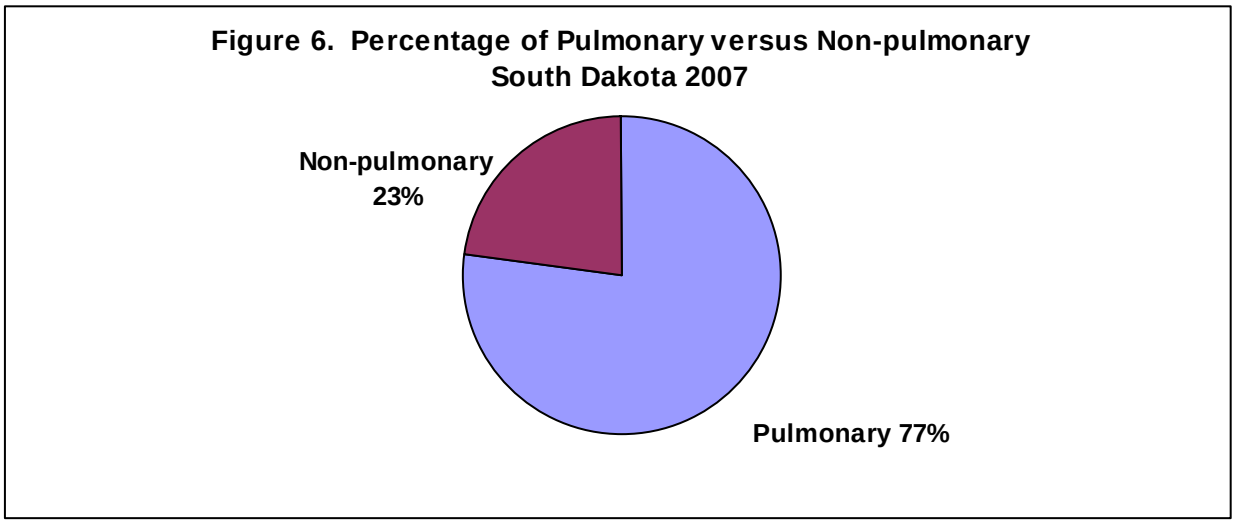
Tuberculosis cases in South Dakota have historically been located in a few geographic locations that consistently report the highest number of cases. These include Minnehaha County which reports the most number of foreign-born TB cases and Shannon, Todd and Pennington counties which reported the highest number of Native American cases. However, every year there are

additional counties throughout the state that report active TB cases representing isolated cases. Figure 5 and Table 3 detail the counties of residence of the TB cases in 2007.

Table 3. TB Cases Reported by County of Residence, SD 2007

County	# of TB Cases	County	# of TB Cases
Charles Mix	3	Shannon	1
Haakon	1	Spink	1
Lawrence	1	Todd	1
Minnehaha	3	Ziebach	2

Tuberculosis remains primarily a pulmonary disease with approximately 85% of cases nationally being reported as pulmonary disease and 15% as non-pulmonary disease. South Dakota has historically reported a higher percentage of non-pulmonary TB disease as described in Figure 6. The non-pulmonary sites of disease in 2007 included lymph node and bone tuberculosis.

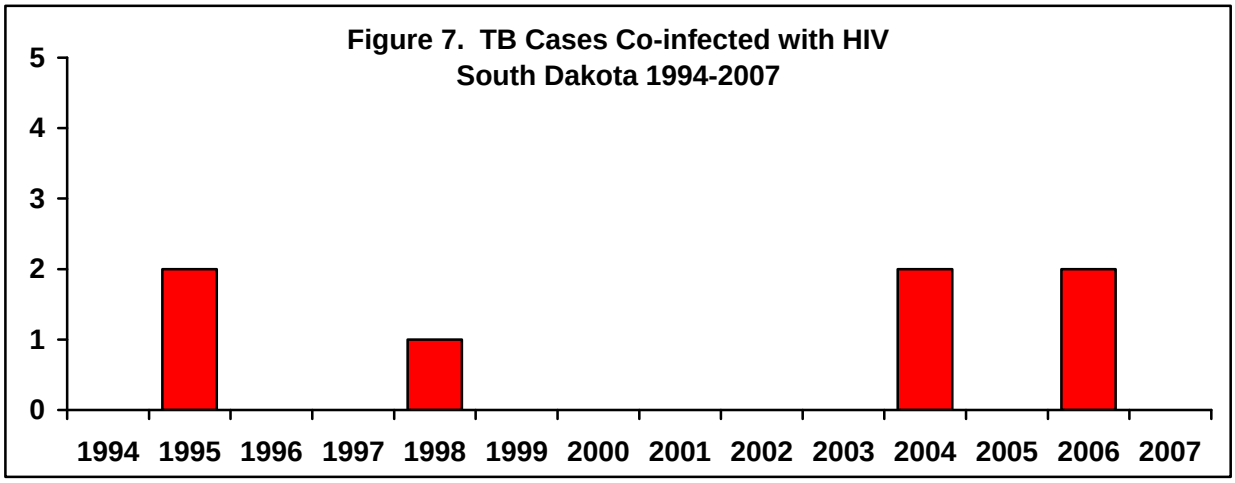


The average age of the TB case in 2007 was 60 years of age. However, this varied by sex with male TB cases being older at 62 years and the female TB cases being younger at 57 years of age. In addition, TB cases born outside the United States tended to be younger with the average age of 53 years while the US born TB cases were older at 61 years of age. Table 4 provides additional information on the age at diagnosis for the TB cases reported in 2007.

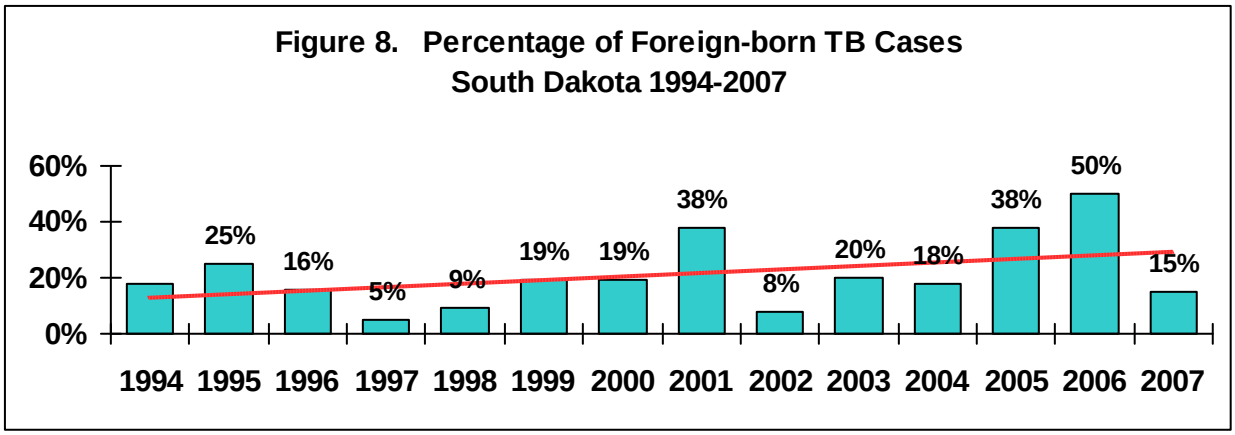
Table 4. TB Cases Reported by Sex and Age, SD 2007

Age (years)	Male	Female	Total	% of cases
0-4	0	0	0	0%
5-9	0	0	0	0%
10-14	0	0	0	0%
15-19	0	0	0	0%
20-29	0	1	1	8%
30-39	0	0	**0**	0%
40-49	1	1	**2**	15%
50-59	4	1	**5**	39%
60-69	0	2	**2**	15%
70-79	1	1	**2**	15%
80-89	1	0	**1**	8%
90+	0	0	**0**	0%
Total	**7**	**6**	**13**	**100%**

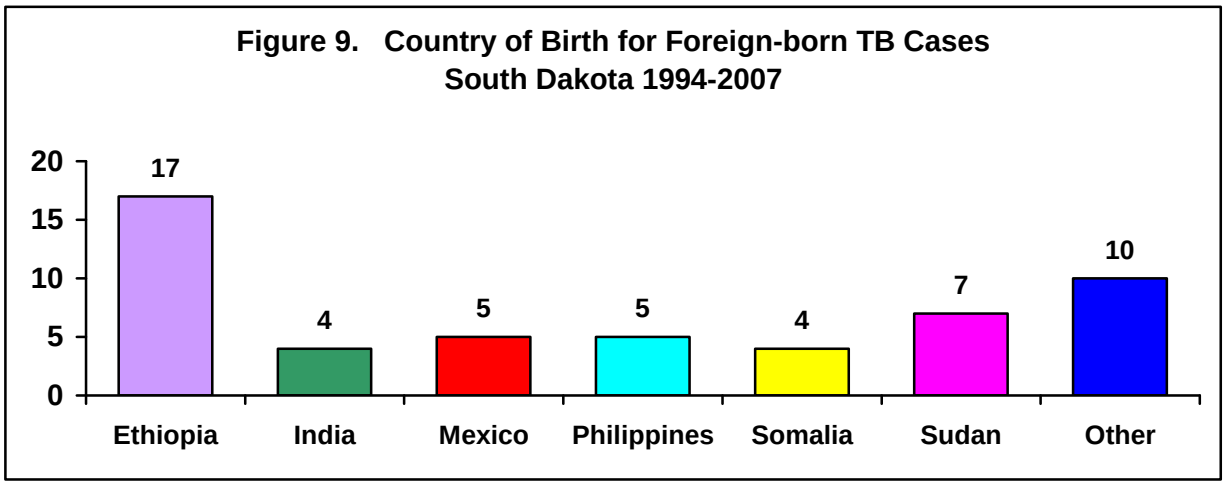
Co-infection with HIV is an important risk factor for the development of active TB. Because of this, all TB cases diagnosed in South Dakota aged 25-44 years of age are offered HIV testing. Co-infected TB cases require more monitoring for toxicity and frequently treatment with second line drugs. Figure 7 describes the number of TB cases co-infected with HIV since 1994 showing that these cases remain uncommon with only 7 reported during this 14 year time period.



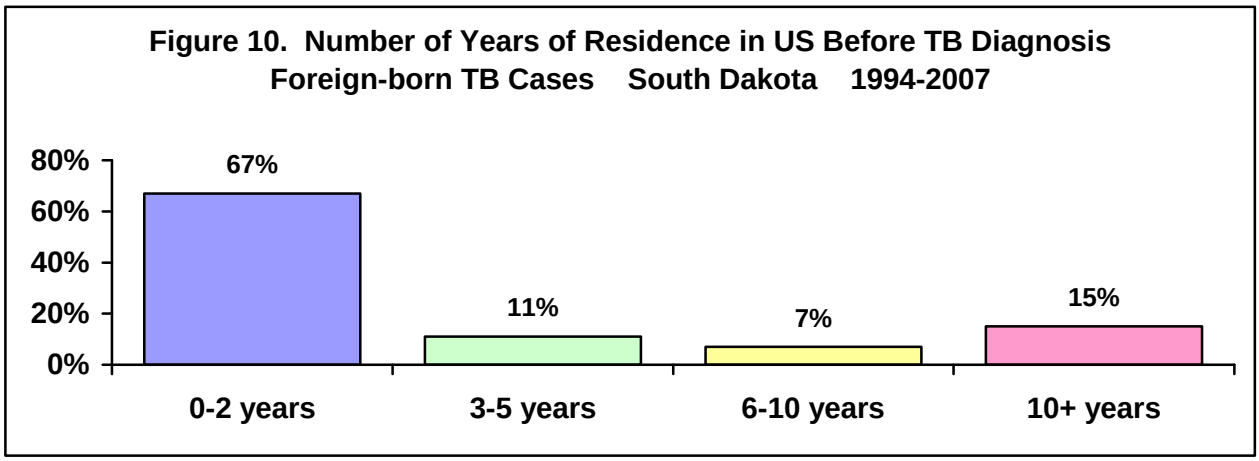
Tuberculosis cases who were born outside the United States continue to represent a larger and increasing percentage of TB cases in the United States as well as in South Dakota. However, during 2007 this group decreased to only 15% of the TB cases reported in South Dakota. Figure 8 describes the percentage of foreign-born TB cases in South Dakota.



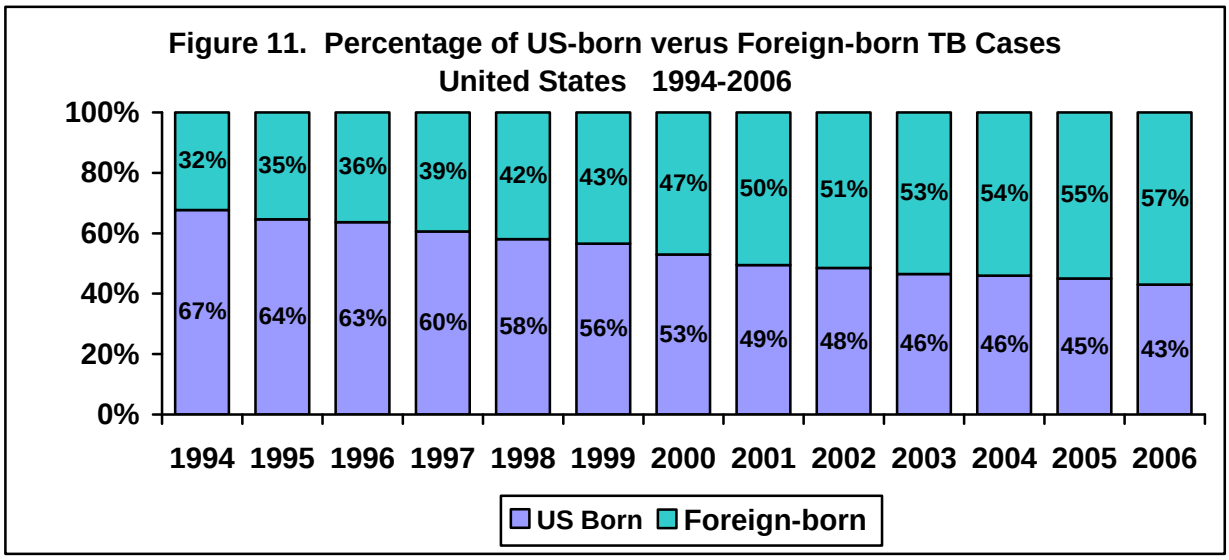
Foreign-born TB cases continue to come from many areas of the world however the majority of the cases reported in South Dakota are of African descent. Figure 9 describes the country of birth for the foreign-born TB cases reported in South Dakota since 1994. Countries of birth for the "other" category include Afghanistan, China, Indonesia, Romania, Russia, South Africa and Vietnam.



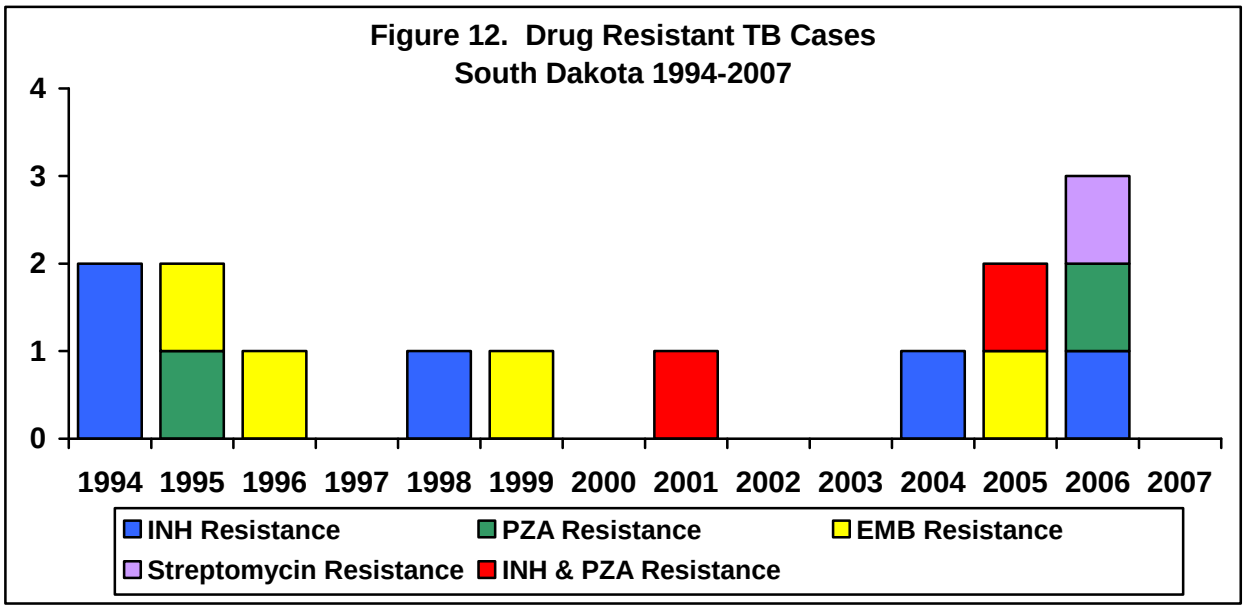
Most foreign-born persons who develop active TB usually do so within the first 2 years after arrival in the United States. Figure 10 describes that 67% of foreign-born TB cases since 1994 developed active TB within the first 2 years of their arrival. Because of this increased risk of development of active TB, these individuals are targeted for preventive activities including targeted TB skin testing and preventive treatment programs.



Foreign-born TB cases represent a unique challenge to the South Dakota TB Control Program because of cultural issues, language barriers and a greater likelihood of drug resistance. As these cases continue to increase in South Dakota, additional time and resources will need to be dedicated to address these unique issues. Figure 11 describes the ever increasing trend of the percentage of foreign-born TB in the United States since 1994.



All culture positive TB cases are tested for resistance to first-line TB medication including isoniazid, rifampin, pyrazinamide, ethambutol and streptomycin. Patients with single drug resistance can usually be successfully treated for their TB disease. Multi-drug resistant TB (defined by CDC as resistance to at least INH and RIF) is a significant public health problem because of the difficulty in achieving a successful treatment outcome. Figure 12 describes the drug resistant TB cases since 1994 illustrating that South Dakota has most often had single drug resistant cases reported. No multi-drug resistant TB cases have ever been reported in South Dakota although the Department of Health did manage a MDR-TB case reported in Colorado who moved to South Dakota during 2006.



South Dakota has reported a higher than expected mortality rate during certain years, especially among Native American patients. Table 5 describes the mortality rates for the last 4 years.

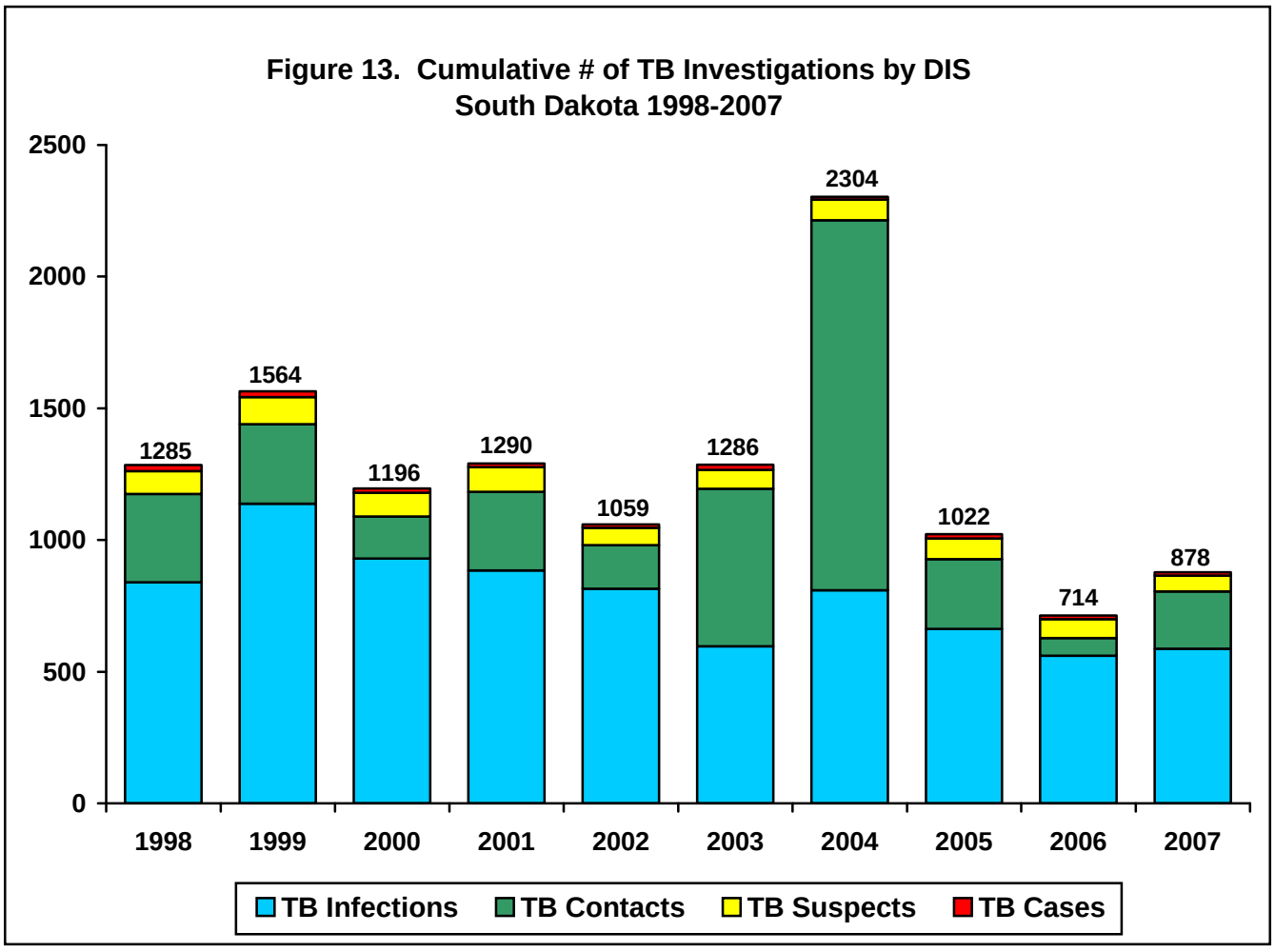
Table 5. TB Mortality by Race and Year, SD 2004-2007

Race	2004		2005		2006		2007	
All races	1/11	9%	3/16	19%	2/14	14%	2/13	15%
Native American	1/5	20%	3/6	50%	2/6	33%	2/7	29%
White	0/4	0%	0/4	0%	0/1	0%	0/3	0%
Black	---	---	0/3	0%	0/4	0%	0/2	0%
Hispanic	0/2	0%	---	---	---	---	---	---
Asian	---	---	0/3	0%	0/3	0%	0/1	0%

The workload in the TB Control Program includes four categories of patients:

1) **TB cases** (persons diagnosed with active TB)
2) **TB suspects** (persons suspected of active TB with a pending diagnosis)
3) **TB contacts** (persons confirmed to have been exposed to an infectious TB case)
4) **Latent TB infection** (persons reported with a positive TB skin test)

All of these conditions are reportable to the TB Control Program and are initiated for investigation. Disease Intervention Specialist (DIS) staff are responsible for ensuring appropriate investigation, treatment and follow-up of these individuals statewide. Figure 13 describes this cumulative caseload which is divided among 19 DIS staff illustrating that the active TB cases and suspect TB cases represent the smallest number of patients reported. TB contacts and patients with latent TB infection make up the greatest percentage of assigned workload for DIS staff within the TB Control Program.



Providing for appropriate treatment and follow-up of active TB cases and suspects is the highest priority of the South Dakota TB Control Program. However, in order to achieve TB elimination in South Dakota, an emphasis must be made on preventing future cases of TB. This is accomplished by follow-up of persons infected with latent TB infection (LTBI). These individuals are infected with the TB bacteria (*Mycobacterium tuberculosis*) but have not yet developed an active form of the disease. By finding and treating these individuals, future TB cases can be prevented and therefore the TB Control Program dedicates time and resources to this preventive strategy.

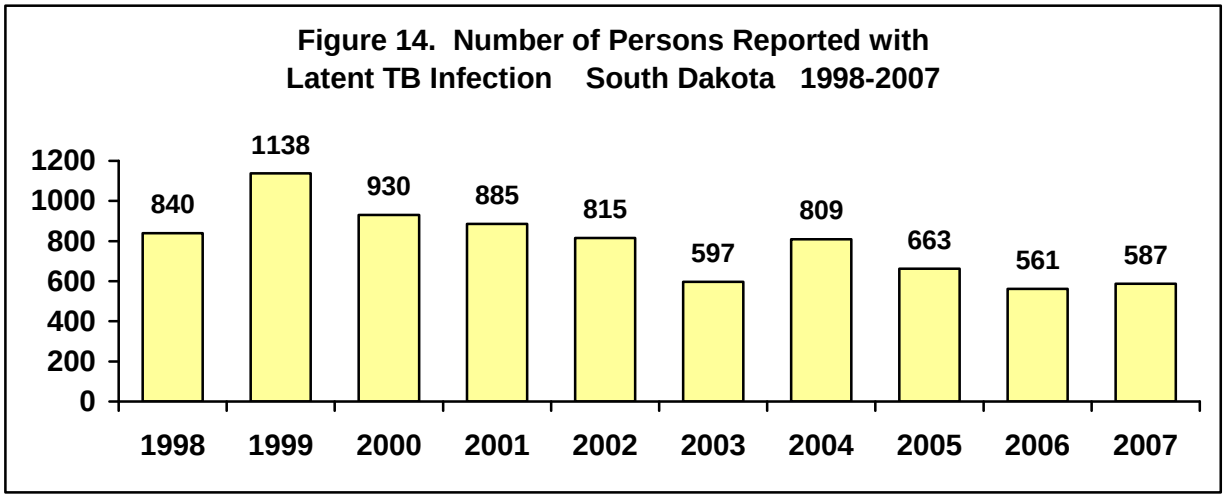


Figure 14 presents the number of patients reported with latent TB infection (positive TB skin tests) over the last 10 years. All of these individuals have the potential to develop active TB disease and potentially be infectious to others.

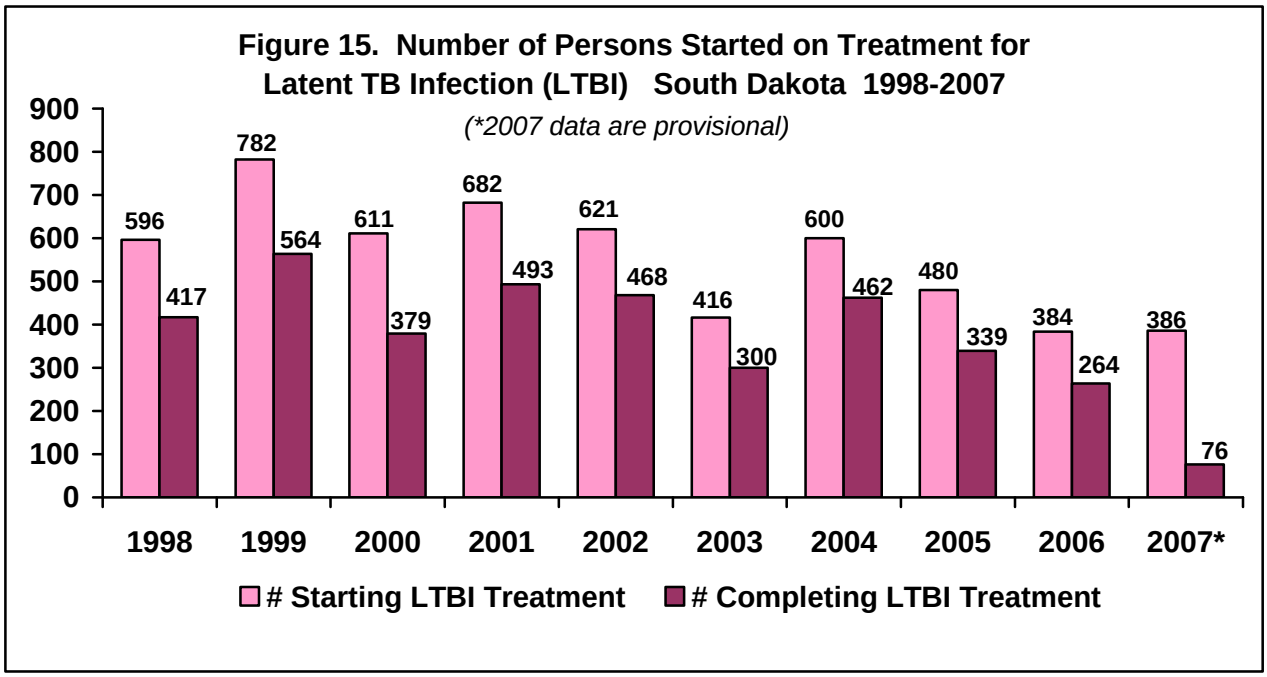
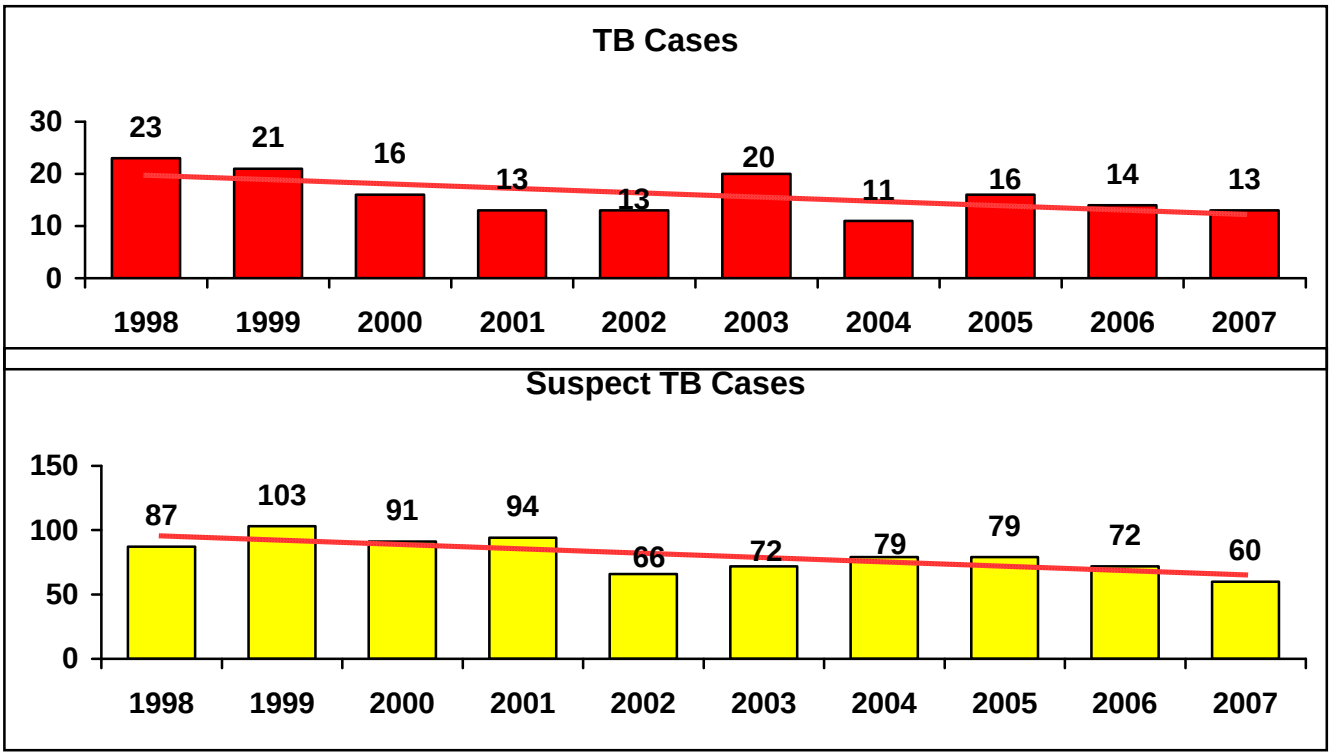
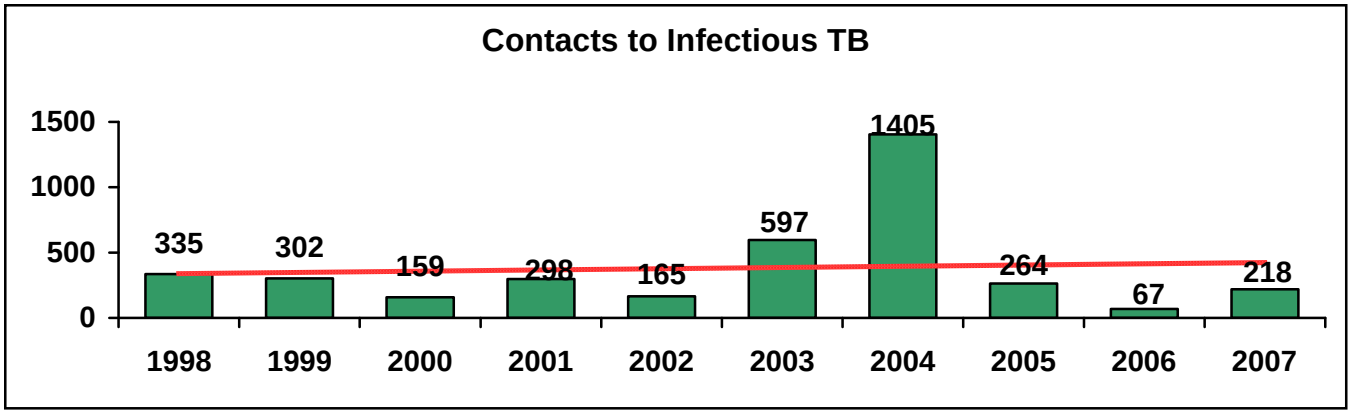
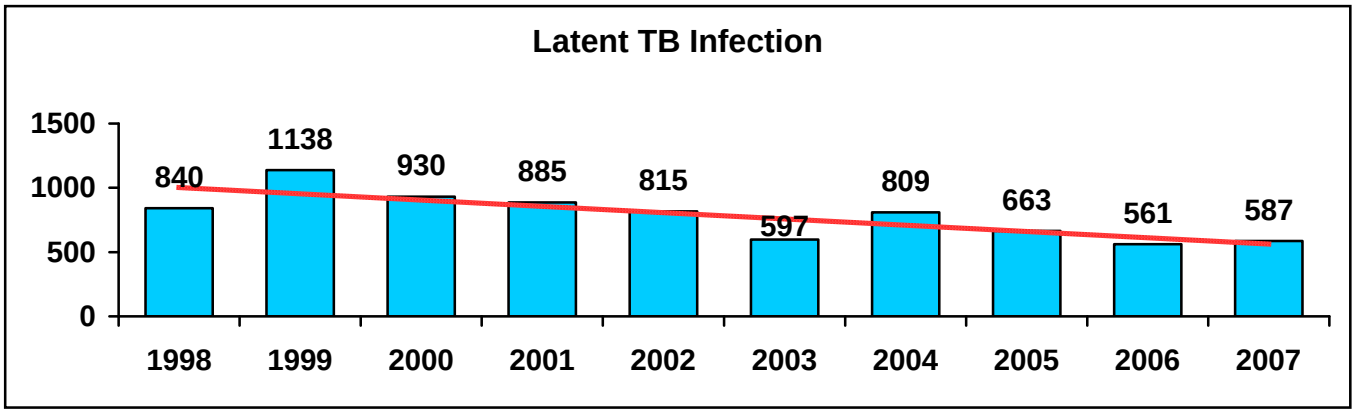


Figure 15 presents the number of patients with latent TB infection that started on a course of preventive treatment as well as the number who ultimately completed this treatment. The usual treatment is done with Isoniazid (INH) which is provided free of charge to patients statewide by the TB Control Program.

Summary of TB Control Program Caseload, SD







For additional information, please contact Kristin Rounds, Tuberculosis Control Program Coordinator at (605) 773-3737 or 1-800-592-1861 or see the website: http://doh.sd.gov/TB/.

Why We Need to Eat an Elephant:
Reducing American Indian Health Disparities

Dr. Gail Gray, Health & Medical Services, SD Department of Health
Robert D. Moore, Council Representative, Rosebud Sioux Tribe
CeCe Big Crow, BS, Research Review Board Coordinator, Oglala Sioux Tribe

Reducing health disparities between American Indians and the population as a whole in South Dakota is a topic that most people believe is important and needs to be addressed. It is very complex and can be likened to eating an elephant, such a daunting task no one knows where to start. Dr. Lon Kightlinger, State Epidemiologist, in the Department of Health has begun the focus by reviewing health data to see just how serious a problem this is. "Very" and "Significant" are two descriptors. We also know that the health of American Indians is significantly impacted by poverty, geographical isolation, lack of health insurance, and lack of transportation to existing health services.

The Data Tell Us

Epidemiological studies which include a breakout of South Dakota American Indians illustrate significant disparities including shorter lives, higher health risk behaviors and greater occurrence of disease. Below are just five examples.

- Years of potential life lost before age 75 is more than three times as great for American Indians in South Dakota than the state population as a whole.
- South Dakota American Indians have the highest death rate of any racial group in the U.S.
- Three times as many American Indians die of accidents, often preventable, than white people in our state.
- American Indian adults are 2.2 times as likely as white adults to be diagnosed with diabetes. They are five times as likely to die from diabetes as whites.
- The infant mortality disparity (2000-2005) is significant – 12.9 SD American Indian infants die before the age of one as compared to 5.5 white infants.

Self-reported behaviors through the Youth Risk Behavior Survey and the Behavioral Risk Factor Surveillance System illustrate further disparities:

- 69% of South Dakotans report their general health as excellent or very good, only 44% of American Indians do. Over 20% of South Dakota Indians say their general health is fair or poor.
- South Dakota American Indians have the highest death rate of any race/ethnic group in the US. The disparity is even greater when you consider South Dakota whites have the second lowest death rate in the US.
- The 2005 Youth Risk Behavior survey reported that 11% of American Indian students in South Dakota have attempted suicide.

Hope

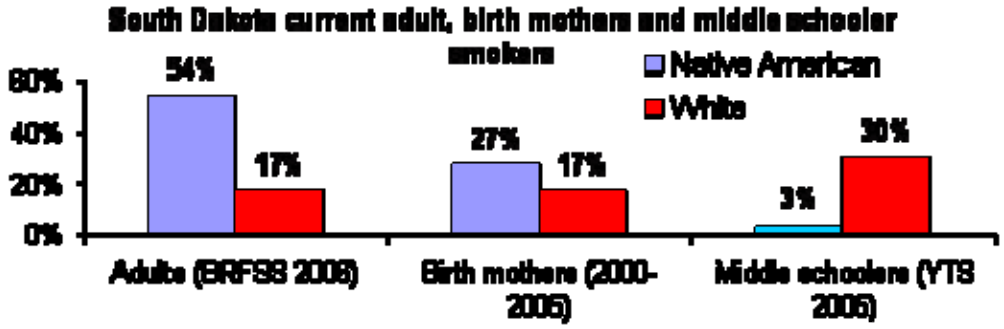
There are several bright spots in this challenging picture.

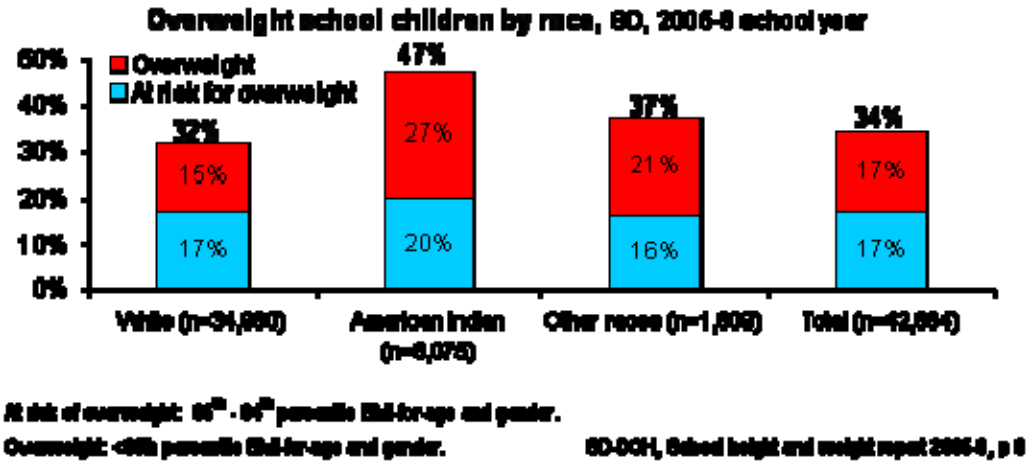
- We have an increasing number of committed, passionate advocates for and providers of health service.
- Improved surveillance is a good tool to use in fighting health disparities. The Aberdeen Area Tribal Chairman's Health Board Epidemiological Center in Rapid City and South Dakota Department of Health (DOH) staff are producing solid data which can be used to set priorities for services and pursue additional fiscal and personnel resources.

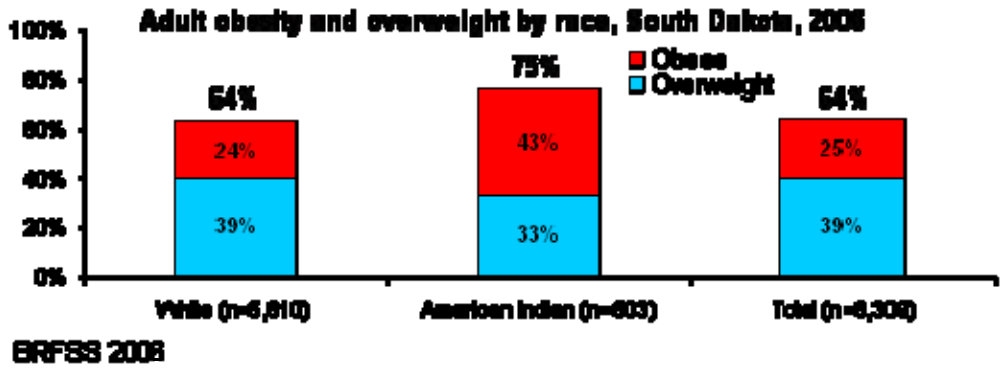
- Immunization rates are increasing as well as the documentation of them in the South Dakota Immunization Information System (SDIIS). The Wanblee Indian Health Service clinic received a Golden Syringe Award this year which means they had an immunization rate of 90% or greater in the 24-35 month age category over the past year. In addition the Rosebud Indian Health Service clinic received the "I Make a Difference Award" for showing outstanding commitment in entering immunization records into the SDIIS.
- Sexually transmitted disease rates have been very high on several reservations in the past decade. However, 2007 data from the Rosebud Reservation illustrates a significant reduction in gonorrhea rates.
- Use of sealants in dental care is higher on reservations than off-reservation.
- The Healthy Start, a home visiting program for pregnant women and young children, is expanding through tobacco tax funding. In response to increased revenue, some staff time will be committed to an increased focus on helping pregnant women quit smoking during pregnancy and staying quit once their baby is born.
- Although infant mortality is disparate, the American Indian infant mortality rate has continued to decline since l985.
- Although the American Indian teenage pregnancy rate is still significantly higher than the white rate, 7.6% as compared to 1.6%, that rate continues to decline.
- There is an increasing number of specialized projects being funded by DOH to fight high risk behavior. One example is the diabetes prevention project with the Indigenous Diabetes Education Alliance. This program will assist with diabetes prevention in the American Indian elementary schools on the Pine Ridge Reservation. This includes facilitation of talking circles: pre and post-intervention assessments with students and faculty; and production/dissemination of an educational diabetes newsletter geared specifically for the youth and their families.
- Fiscal support from the Department of Social Services has allowed an expansion of the Bright Start Home Visiting Program in Rapid City. We expect a greater focus on American Indian women who are pregnant or new mothers.

Future Challenges

The future for this group will be challenging. Risk factors of obesity and tobacco use are still disproportionately high among American Indians. The 2006 BRFSS reports that the self-reported prevalence of smoking among American Indian adults was 54%.This contributes to significant health challenges. The three graphs below illustrate this clearly and emphasize why we need to redouble our efforts to reduce the prevalence of tobacco use and obesity.







Call to Action

We need to eat this health disparity elephant one bite at a time. This can be done through increased funding, building diversity on our staff and cultural competence throughout our organizations, and improving our communication and coordination of services.

Communication and coordination are essential to effective change. Multiple efforts at improving communication and coordination are ongoing. Face to face visits among tribal leaders and DOH staff have been held at all South Dakota tribal headquarters. Bimonthly epidemiology conference calls began in fall 2007 with tribal health leaders, DOH staff and others committed to improved services to American Indians. Semiannual face to face meetings with Healthy Start Coordinators, Bright Start, IHS staff and DOH have lead to greater understanding of existing services, paths to more coordination among programs and some increased funding for these programs.

The DOH wants to build diversity and develop improved cultural competency within the staff. Ongoing training is focused on the latter objective. There are increased efforts at recruitment of American Indians for employment and internships. It is hoped that visits by college students and support of high school students at health camps will increase interest in pursuing health occupations.

Limited fiscal resources from the Department of Health are available for health promotion. Some grants are competitive and some not. These funds are to help South Dakotans improve

physical activity levels and nutrition decisions, increase breastfeeding, reduce the use of commercial tobacco and change high risk behaviors which may lead to disease. Notification of resource opportunities to tribal officials and organizations serving American Indians must be given greater attention.

Many say the "Disparity Elephant" is too big and the challenges are beyond our capacity to address. They suggest we focus on smaller problems. The health needs of American Indians in South Dakota are more important than lip service and limited funding. Perhaps a Renaissance genius has words that apply here. Michelangelo said

> "*The greater danger for most of us is not that our aim is too high and we miss it But that our aim is too low and we make it.*"

Let's aim for parity in health promotion and care. It will takes all of us – tribal leaders, other local, state and federal governments, the private sector, schools, health organizations, parents and children themselves. With common goals and mutual respect we can commit to making a difference and then hold ourselves accountable.

South Dakota Department of Health – Infectious Disease Surveillance

Morbidity Report, 1 January – 31 December 2007

(provisional numbers) see http://doh.sd.gov/ID/site.aspx

	Disease	2007 year-to-date	5-year median	Percent change
Vaccine-Preventable Diseases	Diphtheria	0	0	n/a
	Tetanus	0	0	n/a
	Pertussis	61	26	+135%
	Poliomyelitis	0	0	n/a
	Measles	0	0	n/a
	Mumps	6	0	n/a
	Rubella	0	0	n/a
	Haemophilus influenza type b	0	0	n/a
Sexually Transmitted Infections and Blood-borne Diseases	HIV infection	22	25	-12%
	Hepatitis B, acute	7	3	+133%
	Chlamydia	2610	2606	0
	Gonorrhea	252	304	-17%
	Syphilis, early	11	2	+450%
Tuberculosis	Tuberculosis	13	14	-7%
Invasive Bacterial Diseases	*Neisseria meningitides*	3	4	-25%
	Invasive Group A *Streptococcus*	12	21	-43%
Enteric Diseases	*E. coli*, Shiga toxin-producing	47	35	+34%
	Campylobacteriosis	231	219	+5%
	Salmonellosis	171	133	+29%
	Shigellosis	117	131	-11%
	Giardiasis	101	90	+12%
	Cryptosporidiosis	169	44	+284%
	Hepatitis A	6	3	+100%
Vector-borne Diseases	Animal Rabies	27	94	-71%
	Tularemia	7	5	+40%
	Rocky Mountain Spotted Fever	5	4	+25%
	Malaria (imported)	1	1	0
	Hantavirus Pulmonary Syndrome	1	1	0
	Lyme disease	0	1	n/a
	West Nile Virus disease	208	113	+84%
Other Diseases	Legionellosis	4	5	-20%
	Streptococcus pneumoniae, drug-resistant	15	3	+400%
	Additionally, the following were reported: Chicken Pox (78); Dengue fever (3); Group B *Strep*, invasive (20); Hepatitis B, chronic (29); Hepatitis C, chronic (253); Listeriosis (2); MRSA, invasive (87); Q fever (1).			

Communicable diseases are obligatorily reportable by physicians, hospitals, laboratories, and institutions.
The **Reportable Diseases List** is found at http://doh.sd.gov/Disease/report.aspx or upon request.
Diseases are reportable by telephone, fax, mail, website, or courier.
Secure website: www.state.sd.us/doh/diseasereport
Telephones: 24 hour answering device 1-800-592-1804; for a live person at any time call 1-800-592-1861; after hours emergency 605-280-4810. **Fax** 605-773-5509.
Mail in a sealed envelope addressed to the DOH, Office of Disease Prevention, 615 E. 4th Street, Pierre, SD 57501, marked "Confidential Medical Report".

2,900 copies of this Bulletin were printed by the Department of Health at a cost of $0.59 per copy.